

Thinking on supporting young science?

One of the objectives of the iGEM competitions is to engage society in the discussion, advancement and application of Synthetic Biology and science in general.

If our project is of interest to you and you would like to make a contribution, you can become one of our sponsors.

Contact us to know the benefits!

iGEM Göttingen 2014

Department of Molecular Microbiology and Genetics
Grisebachstraße 8
37077 Göttingen

E-mail: igem2014@uni-goettingen.de

iGEM Team Goettingen

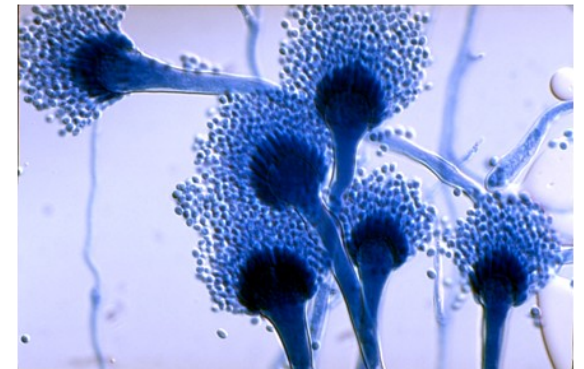


International Genetically Engineered Machine Competition

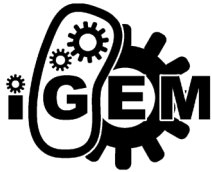


iGEM Göttingen 2014

A novel approach for detecting fungi



The iGEM team Göttingen 2014



The International Genetically Engineered Machine Competition (iGEM) is the world premier Synthetic Biology competition at the undergraduate level. Students are given a kit of biological parts and during the course of a summer they use these parts and design new ones to build biological systems and operate them in living cells.

Teams from universities and institutes from all over the world participate in this competition

FACTS ABOUT iGEM

- Beginning in 2013, iGEM was initially a month-long course at the Massachusetts Institute of Technology.
- From 2012, it became an independent nonprofit organization.
- For this year's edition, there are 246 registered teams.

and the best projects are awarded. After the competition, some projects are adopted as normal research projects at the institutions where they come from and eventually published in peer-reviewed journals.

The University of Göttingen has participated in the competition since 2012 and has won two gold medals and the prize for best presentation in 2013. This year the team is composed by a

group of Master Students from the Microbiology and Biochemistry program at the University of Göttingen under the supervision of Prof. Dr. Gerhard Braus.

The project: finding peptides with affinity to surface proteins

We want to prove the principle that by running a screening through a **peptide library**, we will be able to find some with affinity towards a **protein of interest**.

Our proteins of interest are surface proteins from different fungi, some of which are known to cause severe infections in humans with a debilitated immune system, such as post-transplantation patients and AIDS patients.

For these patients, early diagnosis is critical, as the mortality rate is exceptionally high among them; for example, invasive aspergillosis (the infection by fungi from the genus *Aspergillus*) has a mortality rate of 25-90% according to the *Fungal Infection Trust* [<http://www.aspergillus.org.uk>].

Eventually, by modifying the selected peptides with the proper tags, they can be employed as a diagnostic or even as therapeutic agents.

A new research tool for Synthetic Biology

Many biochemical and biologically significant events can take place when two molecules interact with each other.

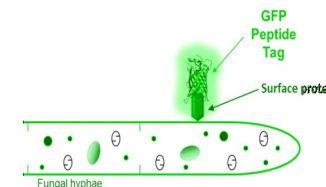
Our screening method is, generally speaking, a way to find new molecules with potential biological applications.

The project in a nutshell

- We are screening a peptide library to find peptides with affinity to fungal surface proteins.
- The selected peptides can be modified to generate new diagnostic and therapeutic tools.
- We will submit our peptides to the Registry of Biological Parts [partsregistry.org].
- Our methodology can be generalized to generate peptides with affinity to other molecules.

This pipeline should allow other researchers to select novel biological parts that interact with their protein(s) of interest, and which can be further refined to increase specificity and modified to add functionalities with the existing tools of Synthetic Biology.

A novel approach for detecting fungi



In our project, the selected peptides will be attached to a fluorescent tag and submitted to the Registry of Biological Parts. However, the modifications are not restricted to a fluorescent tag: radioactively labeled compounds, attachment of different functional groups and immunoactive tags, among others, are also options that can be explored.

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E-mail: igem2014@uni-goettingen.de

 iGEM Team Goettingen

 @iGEMGoe